

- 1934 *Ormia buseki* (Tns.) Curran, Bull. Amer. Mus. Nat. Hist. 66:495. [In key; British Guiana.]
- 1936 *Ormiophasia busekii* Tns.; Townsend, Manual of Myiology 3:101. [Synonymy as in Townsend (1931), except *morardi* given merely as "congeneric."']
- 1938 *Ormiophasia busekii* Tns.; Townsend, Manual of Myiology 7:236. [Synonymy as in Townsend (1936).]
- 1942 *Ormiophasia busekii* Tns.; Townsend, Manual of Myiology 12:325, and Plate 28, fig. 226. [Large figure of larva.]
I know the species from Panama, the Canal Zone, Costa Rica, and Venezuela.

7. *Ormiophasia morardi* (Séguy)

- 1926 *Pseudoneoptera Morardi* Séguy, Eneyel. Ent., Ser. B, II, Dipt. 3:19. [French Guiana; female, in Paris Museum.]
- 1927 *P. Morardi*; Séguy, C. R. Congrès Soc. Savantes, Paris 1926, p. 424. [Mention.]
- 1931 *Ormiophasia busekii* var. *morardi* (Séguy) Townsend, Revista Ent. 1:82. [Combination by implication; "scarcely more than a variety."']
- 1936 *Ormiophasia morardi* (Séguy) Townsend, Manual of Myiology 3:101. [Congeneric with *busekii*.]
- 1938 *Ormiophasia morardi* (Séguy) Townsend, Manual of Myiology 7:236. [Congeneric with *busekii*.]

Note: The treatment of the genus *Euphasiopteryx* Townsend will appear in the December *Proceedings*.—Editor.

A NEW SPECIES OF CULEX AND NOTES ON OTHER SPECIES OF MOSQUITOES FROM OKINAWA

(DIPTERA, CULICIDAE)

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Since publication of a treatise on the mosquitoes of Okinawa (Bohart and Ingram, 1946b) another visit to this Ryukyuan island was made in September 1951, under the auspices of the Department of the Army in collaboration with the Pacific Science Board of the National Research Council. Although time on Okinawa was limited to a few weeks, two trips were made to the northeast part of the island and some interesting material was collected.

The locality visited is a small stream near the ocean in a steep ravine near East Taira. The streambed and parts of the banks are mostly rock with numerous crevices above and below the water level of the stream. The collecting site was brought to my attention by Col. W. J. La Casse who spent several days surveying the northern part of the island in September 1951.

Among his finds near East Taira were larvae of a *Uranotaenia* which checks closely with the description and figures of *annandalei* Barraud as given by Barraud (1934). Adults reared from these larvae closely resemble those of *nauseica* R. Bohart and Ingram (1946b) and indicate that the two species are the same. My collecting in this locality yielded *Uranotaenia stonci* R. Bohart and Ingram (male, female, larva), *Aedes riversi* R. Bohart and Ingram (male, female, larva), *Anopheles sinensis* (Wiedemann) (female), *Culex vishnui* Theobald (female), *C. tritacniorhynchus* Giles (female), *C. ryukyensis* R. Bohart (male, female, larva), *C. tuberis* R. Bohart and Ingram (male, female, larva), *C. infantulus* Edwards (male, female), *C. hayashii* Yamada (male, larva), and a new species of *Culex* (*Neoculex*) (male, female, larva). The finding of this material has prompted the following notes and descriptions.

***Uranotaenia annandalei* Barraud**

Uranotaenia annandalei Barraud, 1926. Indian Jour. Med. Res. 14:343.
Male, female, India and Burma.

Uranotaenia testacea Theo. (?) of Edwards, 1932. Bul. Ent. Res. 23:559.
Larva, Hong Kong.

Uranotaenia nauseica R. Bohart and Ingram, 1946. Navmed 1055: 56,
Bu. Med. and Surg., Navy Dept., Washington. Male, Okinawa. *New synonymy*.

The larvae are quite distinctive, with three plate-like appendages on the antenna, two being apical and the third borne on a projection near the middle of the shaft. The scutal integument varies from brown to dark brown.

***Aedes* (*Stegomyia*) *flavopictus downsi* R. Bohart and Ingram,
new status**

Aedes downsi R. Bohart and Ingram, 1946. Jour. Wash. Acad. Sci. 36:51. Male, female, larva, Okinawa.

At the time *Aedes downsi* Bohart and Ingram was described no specimens of *A. flavopictus* Yamada were available for study, and the original description of *flavopictus* indicated a somewhat different species. In 1951, through the kindness of Dr. Manabu Sasa, I was able to study Yamada's types housed in the Institute for Infectious Diseases of the University of Tokyo. There are 3 male and 2 female cotypes collected at Shiba, Tokyo, Honshu. Also, Dr. Sasa made available to me reared adults and their associated larval skins. From a comparison of this material with paratypes and other specimens of *downsi* it appears likely that a single species is involved.

I am of the opinion that *downsi* represents a subspecies with the following tendencies: (1) restriction of the silver stripe on the front surface

of the hind femur to the basal two-thirds or three-fifths of the femur, (2) expansion of the white markings of hind tarsal IV to cover five-sixths to nine-tenths of the segment, (3) reduction of the tergal pale stripes of the abdomen to weak or incomplete bands especially on III. The gills are variable in length, often quite short, and always unequal. The fifth pentad hair almost always has more than 4 branches and this serves to distinguish it from *A. albopictus* (Skuse), *A. aegypti* (Linnaeus) and *A. riversi*. In the typical subspecies from various of the main islands of Japan the fifth pentad is 6 to 20 branched according to Sasa and Kano (1951) and 5 to 17 branched according to LaCasse and Yamaguti (1950).

***Aedes* (Finlaya) feegradei** Barraud

Aedes feegradei Barraud, 1934. Fauna of British India. Diptera 5:164. Male, female, larva, Burma.

Larvae collected in tree holes on Ishigaki Island in the southern Ryukyus check exactly with those reported from Okinawa by Bohart and Ingram (1946b) as "*Aedes* (*Finlaya*) sp. in *gubernatoris* group." As noted at that time, the larvae agree with the description of *A. feegradei* from Rangoon, Burma. Adults reared from the Ishigaki material also check closely with *feegradei* and on this basis the species can be recorded rather definitely from Okinawa.

***Culex* (Lophoceraomyia) tuberis** R. Bohart

Culex tuberis R. Bohart, 1946. Proc. Biol. Soc. Wash. 59:42. Male but not larva, Okinawa.

The new specimens, consisting of 3 males, 4 females, 7 pupal skins and 10 larvae or larval skins, are especially interesting since the species has previously been known only from 3 males and a doubtfully associated larval specimen. The larvae were extracted by means of a siphon from a deep cliffside rock hole in company with *U. stonci*. In the light of this additional material it appears that the larva previously described was an atypical specimen of *C. infantulus* Edwards. The original description can be supplemented as follows:

Female.—Agreeing with male in general coloration. Pleuron sometimes greenish, scutal integument medium to dark brown, scales of abdominal tergites all dark. Palpus about one-fifth as long as proboscis, torus with a small but sharp "point" at the upper inner angle corresponding to the pronounced knob of the male, no lower mesepimeral bristle.

Larva.—Antenna constricted and tufted a little beyond apical two-thirds, darkened at extreme base only, subapical bristles longer than apical long one, inserted about 3 subapical bristle diameters from apex (6 diameters in *infantulus*); clypeal spine stout, less than one-half as long as distance between insertion of spines (one-half in *infantulus*); head hair A with 4 or 5 branches, B single and reaching almost to

antennal tube apex, C double and reaching to middle of antenna, d single; mentum with about 17 teeth. Shoulder hairs 1, 2, 3, 5, 6 and 8 single, 4 and 7 double (7 usually triple and 8 double in *infantulus*); thoracic integument without evident spicules. Lateral abdominal hairs double or triple on III to VI. Comb of about 70 apically fringed teeth in a patch; first pentad hair single or double, rarely triple, second and fourth pentads single, third pentad with 6 to 9 branches, fifth pentad single or double (usually with 3 to 5 branches in *infantulus*); siphon a little more than 7 times its basal diameter, with 4 pairs of double or triple hairs which are longer than diameter of tube at point of hair insertion, 10 to 14 pecten teeth each with 1 to 3 denticles (about 7 denticles in *infantulus*), pecten occupying about one-third of tube length (one-quarter in *infantulus*); anal ring with a very small double to quadruple hair; gills tapering, about equal, a little shorter than anal ring; 10 or 11 hair brushes in barred area; outer apical bristle single, inner apical bristle double (triple or quadruple in *infantulus*).

In the key to Okinawa mosquitoes given by Bohart and Ingram (1946b) this larva runs to the second half of couplet 28 on page 51 but differs in having only 4 pairs of siphon tufts.

Pupa.—Breathing trumpet 6 times as long as its apical breadth and about 11 times its median breadth. Submedian apical hair of tergite II (hair C) with about 10 branches from basal one-fourth and terminating in about 20 branchlets. Lateral hair of segment VIII with 3 to 5 main branches, the longest about one-half as long as paddle. Paddle somewhat pointed apically.

Culex (Culiciomyia) ryukyensis R. Bohart

Culex ryukyensis Bohart, 1946. Proc. Biol. Soc. Wash. 59:41. Male, female, larva, Okinawa.

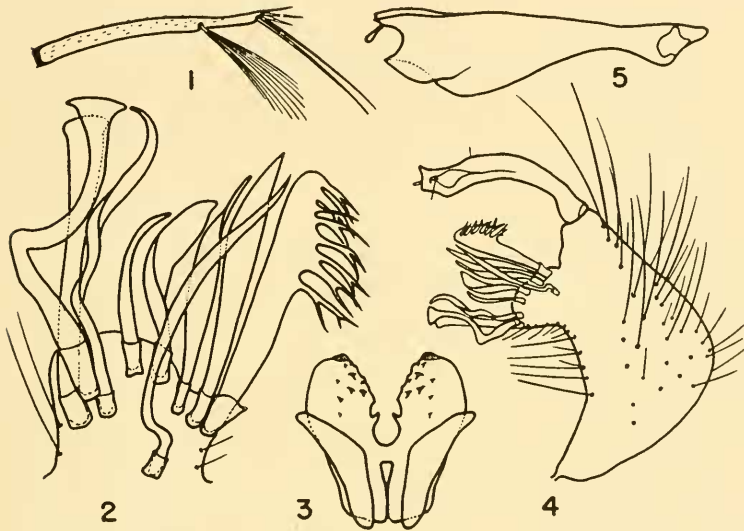
This species has been recorded from the Japanese islands of Kyushu and Honshu by LaCasse and Yamaguti (1950). However, examination of specimens in the collection of Dr. Manabu Sasa indicate that the Japanese form is a different and presumably unnamed species.

The females of the two are very similar except that *ryukyensis* is somewhat smaller. The male genitalia are, however, entirely different. *C. ryukyensis* has two black rods and one brown rod on the subapical dististyle lobe and the black ones are situated on projections. Furthermore, there is no crest on the dististyle. In the Japanese species there is one dark brown and two light brown rods, none on projections, and the dististyle has a cockscorn-like crest. These differences can be seen even on unmounted specimens under high power of a dissecting microscope. Still another point of separation is that the male palpus is only slightly longer than the proboscis in *ryukyensis* but longer by the length of the last segment in the other species. In the larvae, *ryukyensis* has three pairs of siphon bristles instead of four.

Culex (Neoculex) okinawae R. Bohart, new species

Figs. 1-5

Male.—Palpus and proboscis dark, former slightly more than one-half as long as latter, terminal palpal segment with short bristles except toward apex. Vertex with broad median area covered with gray to ochreous narrow curved and brown upright forked scales, pale broad



Figs. 1-5. *Culex okinawae*, not drawn to scale. Fig. 1, larval antenna; fig. 2, subapical lobe of basistyle, dorsal; fig. 3, mesosome; fig. 4, sidepiece of male genitalia, dorsal; fig. 5, dististyle, inner lateral view.

appressed scales laterally. Scutal integument brown covered with bronzy hair-like scales, scutellum with somewhat paler narrow scales; anterior pronotal lobe and pleuron apparently devoid of scales; one lower mesepimeral bristle; wing and halter knob dark scaled; legs dark except on femora behind, pale scales extending the whole length of fore and mid femora, and basal five-sixths of hind femur. Abdominal tergites all dark, scales somewhat iridescent, V to VII slightly longer than broad. Genitalia as in figs. 2 to 5; mesosome lobes stoutly bridged, with scattered, outwardly directed teeth toward inner edge; basistyle with five long hairs on inner margin below subapical lobe; latter with 9 oddly formed rods and paddles, fig. 2, the distal one with a series of apically directed, forked projections; dististyle peculiar, apical one-fourth forked in lateral view. Length of wing, 2.5 mm.

Female.—Palpus about one-seventh as long as proboscis. Color and scaling about as in male.

Larva (based on one whole larva and one cast skin).—Antenna slender, dark throughout, 2.6 times as long as distance between clypeal spines, constricted and tufted at apical two-thirds, with many spicules before tuft and a few beyond, apical setae as shown in fig. 1. Clypeal spine black, two-sevenths to one-third as long as distance between spines. Head hair A with 5 or 6 branches; B single at base but split into 2 before middle, 1.8 times as long as distance between clypeal spines; C single, very fine, two-thirds as long as B; d single or split, one-sixth as long as B.

Pupa (based on 3 cast skins).—Breathing trumpet about 4.5 times as long as its apical breadth and about 8 times its median breadth. Submedian apical hair of tergite II (hair C) with 50 or more fine branches, from a stout base. Lateral hair of segment VIII with four to five main branches, the longest about two-sevenths as long as paddle. Paddle rounded apically.

Holotype, male (U.S. National Museum) East Taira, Okinawa, September 21, 1951, R. Bohart. Paratypes, 8 males, 2 females, 1 larva and 1 larval skin, same data at type. Larvae were taken from a deep, shaded rock hole in a streambed in company with *Culex hayashii* and *Uranotaenia annandalei*.

Systematics.—This species is apparently closely related to *C. hayashii* from which it is indistinguishable in the female. However, it is separable at a glance by the male genitalia and the all dark antenna of the larva. *C. hayashii* has a simple and slender dististyle and relatively undeveloped rods and toothed paddles on the subapical lobe of the basistyle. Also *hayashii* has the male palpus three-fifths to three-fourths as long as the proboscis instead of one-half to four-sevenths. The larval antenna of *hayashii* is dark at the base and apex but pale in the middle.

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